

IN THE CLAIMS

Claims 1-25: (Canceled)

Claim 26 (Previously Presented): A medical cooling system comprising:

- a coolant supply unit, and a medical device having distal and proximal ends;
- a first cooling system directing coolant from the coolant supply unit to the medical device at a first temperature along a coolant supply line through a connection point on the proximal end of the medical device, wherein the first cooling system includes a coolant return line leading from the medical device to a coolant scavenging system, and wherein the first cooling system and the medical device comprise a substantially open-loop;
- a second cooling system chilling the coolant within a portion of the coolant supply line upstream of the connection point to a temperature below the first temperature, the second cooling system including an enclosure having a fluid inlet and a fluid outlet, the enclosure defining a fluid path from the inlet to the outlet, the enclosure enveloping the portion of the coolant supply line of the first cooling system; ,wherein the enclosure is disposed in a system component external to the coolant supply unit;
- a compressor in fluid communication with a condenser outputting coolant to the inlet of the enclosure and receiving coolant from the outlet of the enclosure; and
- a programmable controller, the programmable controller being connected to the medical device at the connection point, the programmable controller being in communication with at least one distal sensor in the medical device and coupled to a first valve in the first cooling system, the programmable controller controlling the flow of coolant through the first path to regulate the cooling power of the medical device, wherein the at least one distal sensor is in thermal communication with tissue to be treated to detect the temperature of the tissue to be treated proximate the medical device.

Claim 27 (Previously Presented): The medical cooling system of claim 26, wherein the system component is a connection box disposed along the coolant supply line upstream of the connection point.

Claim 28 (Previously Presented): The medical cooling system of claim 27, wherein the connection box is an electrocardiography connection box.

Claim 29 (Previously Presented): The medical cooling system of claim 26, wherein the system component is attached to an external surface of the coolant supply unit.

Claim 30 (Previously Presented): The medical cooling system of claim 26, wherein the controller is disposed in the coolant supply unit.

Claims 31-46: (Canceled)

Claim 47 (Previously Presented): A medical cooling system for regulating cooling power of a medical device, comprising:

a medical device;

a coolant supply;

a first coolant flow path between the medical device and the coolant supply;

a subcooler disposed about a portion of the first coolant flow path and having an inlet and an outlet;

a second coolant flow path between the inlet and the outlet of the subcooler, wherein the second coolant flow path includes a compressor in fluid communication with a condenser outputting coolant to the inlet of the subcooler and receiving coolant from the outlet of the subcooler;

a first valve in the first coolant flow path,

a programmable controller in communication with at least one distal sensor in the medical device and coupled to the first valve, the programmable controller controlling the flow of coolant through the first path to regulate the cooling power of the medical device, wherein the at least one distal sensor is in thermal communication with tissue to be treated to detect the temperature of the tissue to be treated proximate the medical device.

Claim 48: (Cancelled)

Claim 49 (Previously Presented): The medical cooling system of claim 47, wherein the programmable controller establishes a duty cycle to specifically regulate temperature increases and decreases at a treatment site.

Claim 50 (Previously Presented): The medical cooling system of claim 47, wherein the programmable controller controls a freezing rate of the medical device.

Claim 51 (Previously Presented): The medical cooling system of claim 47, wherein the programmable controller controls a thawing rate of the medical device.

Claim 52 (Previously Presented): The medical cooling system of claim 47, wherein the programmable controller controls specific temperature regimens at a treatment site.